

REMARKS

At the time of the Final Office Action dated October 7, 2004, claims 1-3 and 5-14 were pending and rejected in this application. Applicants acknowledge, with appreciation, the Examiner's allowance of claims 6-10. Applicants also acknowledge, with appreciation, the Examiner's indication that claims 5 and 13 contain allowable subject matter.

Claim 1 has been amended by including the limitations previously presented in claim 3, and consequently, claim 3 has been cancelled. Claim 11 has been amended by including the limitations previously presented in claim 12, and consequently, claim 12 has been cancelled. Claim 2 has also been cancelled. Claims 5 and 13 have been placed in independent form. Therefore, the amendments to the claims do not present any new issue not already addressed by the Examiner in the prior Office Action.

Furthermore, Applicants respectfully submit that by the present Amendment and Remarks, this application is placed in clear condition for immediate allowance. At the least, the number of issues have been reduced, thereby placing this application in better condition for Appeal.¹ Accordingly, entry of the present Amendment and Remarks and favorable consideration are respectfully solicited.

¹ See M.P.E.P. § 706.07(e) ("An amendment that will place the application ... in better form for appeal may be admitted.").

**CLAIMS 1, 3, 11-12 AND 14 ARE REJECTED UNDER 35 U.S.C. § 102 FOR ANTICIPATION
BASED UPON YAMAZAKI ET AL., U.S. PATENT NO. 6,242,292 (HEREINAFTER YAMAZAKI)**

On pages 2 through 8 of the Office Action, the Examiner asserted that Yamazaki discloses a method of manufacturing a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

Initially, Applicants note that both independent claims 1 and 11 recite that "each pulse from the laser respectively irradiates non-identical portions of the source/drain regions." Thus, if identical portion of source/drain regions are irradiated by two or more pulses, then this limitation cannot be met. In the Amendment filed June 22, 2004, Applicants argued that Yamazaki teaches away from this particular limitation. In particular, Applicants referred to column 7, lines 56-63 and column 2, lines 36-44, which are reproduced below:

A two stage irradiation is performed. That is, irradiation of 150 to 300 mJ/cm² is performed as preliminary irradiation and then irradiation of 200 to 400 mJ/cm² is performed as main irradiation. The pulse width is 30 ns, and the number of pulses is 30 pulses/s. The two stage irradiation is performed to suppress deterioration of uniformity of the film surface due to the laser light irradiation at maximum and thus form a film having good crystallinity. (emphasis added)(column 7, lines 56-63)

It has been known that, to moderate nonuniformity of the laser irradiation effect and improve its uniformity, it is better to preliminarily irradiate a weaker pulse laser light (hereinafter referred to as preliminary irradiation) before irradiation of an intense pulse laser light (hereinafter referred to as main irradiation). This effect is very high, and it can reduce the dispersion of the characteristics and thus remarkably improve the characteristics of a semiconductor device circuit. (column 2, lines 36-44)

Yamazaki, therefore, teaches a "two stage irradiation" process in which a preliminary irradiation is followed by a main irradiation. Thus, each identical portion receives at least two pulses (i.e., a pulse from a preliminary irradiation and a pulse from a main irradiation). This teaching by Yamazaki cannot be reconciled with the limitations in claims 1 and 11 that recite "each pulse from the laser respectively irradiates non-identical portions of the source/drain

regions." Although this argument was presented in the last full paragraph on page 8 of the Amendment filed June 22, 2004, the Examiner's "*Response to Arguments*" on pages 11 through 13 is completely silent as to this argument. In this regard, the Examiner is referred to M.P.E.P. § 707.07(f), which states that "the Examiner, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

The Examiner's failure to respond to the above argument is understandable since Yamazaki clearly discloses a two stage irradiation process. Although the Examiner did not directly address the above argument, Applicants do note that the Examiner may have attempted to tangentially address this argument on page 13 of the Office Action when the Examiner stated:

In addition, as stated by the Applicant's own admission of prior art, figure 2A, on page 7, lines 16-23, it is well known in the conventional art to expose to a single shot pulse of laser on the surface of the substrate, and then the laser is then moved to irradiate a separate portion of the surface. Therefore, it would be obvious to one of ordinary skill in the art to incorporate that each pulse or a single pulse would irradiate non-identical portions based on well known conventional techniques taught by Ino and by the Applicant's admission of prior art.

Although the Examiner asserts that it would have been obvious to one skilled in the art "to incorporate that each pulse would irradiate non-identical portion" the Examiner's asserted motivation (i.e., "based on well known convention techniques") is, in fact, not a motivation to modify. Instead, the Examiner has merely employed an "obvious to try" argument, which has long been held by the Federal Circuit as being insufficient to establish the requisite motivation to modify a reference under 35 U.S.C. § 103.² It has been repeatedly held by the Federal Circuit that in order to establish the requisite motivation, the Examiner must make "clear and particular" factual findings as to a specific understanding or specific technological principle which would

² Obvious to try is not the standard. *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

have realistically impelled one having ordinary skill in the art to modify a particular prior art reference to arrive at the claimed invention based upon facts, not generalizations.³ The Examiner's statement as to "well known conventional techniques" is nothing more than a generalization.

Furthermore, notwithstanding that the Examiner could find a motivation to modify Yamazaki so as "to incorporate that each pulse would irradiate non-identical portion" Yamazaki clearly teaches away from the claimed invention. This teaching away from the claimed invention by advocating a two step irradiation constitutes evidence of nonobviousness.⁴ The Examiner is also referred to the paragraph entitled "THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE" in M.P.E.P. § 2143.03.⁵ Since, as discussed above, Yamazaki clearly teaches that each portion of the semiconductor device receives at least two pulses, one having ordinary skill in the art would not have arrived at the claimed invention based upon the teachings of Yamazaki.

It is noted that both claims 1 and 14 also recite that each portion of the source/drain region receives more than one single pulse of energy. This feature is illustrated in Fig. 3 of Applicants' disclosure. As the substrate moves relative to the laser, portions of the substrate 100 receive multiple pulses of energy. For example, there is a portion of the substrate at the middle

³ Ruiz v. A.B. Chance Co., 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); Ecolchem Inc. v. Southern California Edison, Co., 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); In re Kotzab, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999).

⁴ In re Bell, 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993), Specialty Composites v. Cabot Corp., 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988), In re Hedges, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986), In re Marshall, 578 F.2d 301, 198 USPQ 344 (CCPA 1978).

⁵ If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

of the pulses illustrated in Fig. 3 that receives energy from the first through fifth pulse. As stated in Applicants' specification, when a given portion of the substrate receives multiple pulses of energy, the variance in fluence provided to that given portion is reduced.

This limitation (i.e., each portion of the source/drain region receives more than one single pulse of energy) is not contrary to the previously discussed limitation that each pulse from the laser respectively irradiates non-identical portions of the source/drain regions. As illustrated in Fig. 3, each pulse laser respectively irradiates non-identical portion of the source/drain regions since the substrate and laser move relative to one another, and the laser does not dwell on a particular region. In contrast, as discussed above, Yamazaki teaches a two stage irradiation process. Thus, a pulse during the second stage irradiates a portion identical to a portion that was irradiated during the first state. Therefore, Yamazaki fails to teach or suggest the limitations recited in independent claims 1 and 11.

For the reasons stated above, Applicants respectfully submit that the imposed rejection of claims 1, 11, and 14 under 35 U.S.C. § 102 for anticipation based upon Yamazaki is not factually viable and, hence, solicit withdrawal thereof.

**CLAIM 2 IS REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON
YAMAZAKI IN VIEW OF INO ET AL., U.S. PATENT NO. 6,248,606 (HEREINAFTER INO)**

Claim 2 has been cancelled, and consequently, the rejection of claim 2 based upon Ino is moot.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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